



STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Cleon B. Feight, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

March 2, 1983

Mr. Bob G. Donegan, Vice-President
Quintana Minerals Corporation
7591 East Maplewood Avenue, Suite 114
Englewood, Colorado 80111

RE: Review of Mining and Reclamation Plan
Cowboy Canyon Mine
ACT/047/021
Uintah County, Utah

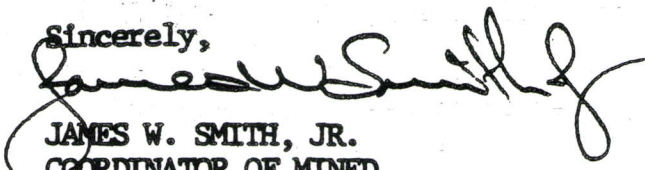
Dear Mr. Donegan:

The Division of Oil, Gas and Mining has made a preliminary review of the Syntana - Utah Shale Oil Project mine plan to determine compliance with the Utah Mined Land Reclamation Act of 1975, Title 40-8, Utah Code Annotated 1953, and the rules and regulations of same. This review was based on information submitted by Quintana Minerals Corporation on December 29, 1982.

In this review, certain necessary information was found to be lacking. The additional information that is needed to complete our review is detailed on the following pages. When the additional information has been received, the total plan can be assessed for compliance with the regulations. Please use the numbers as referenced in this document in organizing your response. MR-1 numbers refer to specific questions and answers on the MR-1 Form submitted as part of the mine plan, while Rule numbers refer to the Mined Land Reclamation Act

If you have any questions, or would like to meet with members of the review team, please contact me or Susan Linner of my staff.

Sincerely,


JAMES W. SMITH, JR.
COORDINATOR OF MINED
LAND DEVELOPMENT

JWS/btb

Enclosures

cc: Jim Bradley, Utah Energy Office
Susan Linner, DOGM
Cy Young, DOGM
Tom Portle, DOGM
Dave Darby, DOGM
Pam Grubaugh-Littig, DOGM

Board/Charles R. Henderson, Chairman • John L. Bell • E. Steele McIntyre • Edward T. Beck
Robert R. Norman • Margaret R. Bird • Herm Olsen

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SYNTANA - UTAH PARTNERSHIP
Cowboy Canyon Mine
ACT/047/021, Uintah County, Utah

MR-1(13)(F)(3)

The mine plan should include geologic contour maps and cross-sections through the permit area which show the stratigraphic relationship of the Birds Nest Aquifer to the oil shale zone, the depth of overburden over the oil shale, isopachs of the oil shale within the permit area, strike and dip of the oil shale and overlying stratigraphic units and the relationship of the oil shale zone to the gilsonite seams within the permit area. Stratigraphic or lithologic logs if correlated to footage depths may be presented when labeled. Confidential material should be so identified.

MR-1(15)(A)(1)

The mine plan submitted as Figure 6 is insufficient for the needs of the Division's review. The plan should delineate the proposed yearly mining sequence over the life of the mine, including when and where expected pillar robbing will occur.

MR-1(15)(A)(2)

The statement was made that "Rock mechanics and design calculations completed to date indicate that the mine panels can be safely mined with zero subsidence . . ." Please provide these calculations, including pillar safety factors. How much pillar robbing will be done and what are the safety factors for the robbed pillars? All calculations should be made to include not only the overburden but also the spent shale and topsoil to be added to the surface.

What provisions are to be made during mining to protect power lines and pipelines from possible damage due to subsidence?

How long are the robbed pillars expected to remain firm before crushing out? Areas affected by such an occurrence should be delineated on a plan map, showing the maximum expected amount of subsidence. Include calculations and support for all subsidence or nonsubsidence proposals.

MR-1(22)(A)

Applicant must supply cross-sections and narrative describing, in detail, proposed methods for sealing of shafts and portals.

Rule M-3

Figure 2, Site Map, shows an exhaust vent in the middle of the Phase III spent shale disposal area. Please explain.

The Phase II spent shale disposal area will cover topsoil pile P according to the same map. What will become of this material?

Plans will need to be submitted which show how runoff will be controlled from the plant area.

The plans should contain sizing calculations and at least one map of sufficient scale to depict hydrologic structures (i.e., culverts, berms, diversions, etc.).

The operator will need to commit to supplying final plans (i.e., cross-sections and sizing calculations) to the Division for sedimentation ponds 2, 3, 4, 5, 6 and 7, and the plans for the associated runoff control systems at least 60 days prior to actual construction.

The operator is reminded of the requirement that the State Engineer's Office and the State Department of Health, Bureau of Water Pollution Control must also issue construction permits for those impoundment facilities.

Final reclamation plans will need to be submitted concerning hydrologic structures.

To establish if there will be any complications with storing water in sedimentation pond 9, the Division requests that the operator describe the distance from the pond base to the mine shafts and the rock characteristics.

Rule M-3(2)(e)

What cover crop(s) will be used for interim reclamation and at what rate(s) of seeding? Mulching rates and materials should also be submitted.

Please submit a specific seed list and mulching technique for the road banks.

A complete final revegetation plan, including: seed mix(es) and rate of seeding in Pure Live Seed (PLS) per acre, or stocking rate (stems/acre) for shrub planting; seedbed preparation; seeding and planting techniques; mulching, irrigation, and fertilization methods, amounts and frequencies or durations must be submitted to the Division for approval at least 60 days prior to any final reclamation. Season of seeding or planting should also be indicated. Revegetation species mixes must be consistent with the postmining land-use.

Specific methods for protecting reclaimed areas from wildlife or domestic animals must be approved in advance by the Division.

(f) The applicant must submit a detailed timetable for the accomplishment of each major step in the reclamation plan.

Rule M-3(5)(c)

The description of the plugging program is insufficient and does not satisfy the requirements of the Division. Please provide an adequate program which includes size and depth of holes, material to be used to seal intercepted migratory substances, and method of plugging the surface.

Rule M-5

A general cost per acre of \$1,500-\$2,000 was given for reclamation. This cost should be more detailed to determine how these costs were derived. There is a reclamation estimate guide enclosed that would be helpful for the operator to follow. This guide details the reclamation process and the determination of costs for the reclamation bond estimate. Salvage values are not allowed to offset the bond requirement.

Rule M-6

The Syntana project deals in conceptual designs. It is requested that an estimate of the amount and extent of underground mining which will occur during Phase I be submitted. A plan should be submitted locating the extent per year of underground mining for Phase I. This would enable the Division to better understand the room and pillar design in relation to the surface facility construction and the White River.

On Figure 2, Site Plan, Figure I is shown but not labeled. Please clarify.

Rule M-10(2)(b)

M-3(2)(c)

Are there any "approved disposal areas" for trash, etc.?

How will the fine shale be handled? Will it be treated separately, reclaimed or mixed with the process shale, etc.?

Rule M-10(2)

Has the pillar size around gas wells been designed yet? If so, what criteria were used in the development of reasonable safety factors? If not, a commitment to submitting these data to the Division prior to mining should be made.

Rule M-10(5)

The typical road and conveyor cross-section, Figure 9, shows a terraced system of highwalls to be emplaced in the canyon from the mine portals to the plant area. The reclamation of these highwalls should be addressed in detail, including the submission of postreclamation cross-section delineating bedrock and fill and showing the proposed angle of slope to be achieved after reclamation.

Rule M-10(2)

M-10(7)

M-10(9)

How will the ripped road pavement be disposed?

How deep will the concrete foundations be buried after having been broken up for reclamation?

(a)(c) How will the shafts and tunnels and core holes be sealed to prevent unauthorized or accidental entry? What specific designs have been developed for their permanent closure?

(1) Where will the fences, berms and barriers be located?

The applicant stated that at closure salvageable waste would be removed and all other wastes will be disposed in approved, covered areas. Where will these areas be? Salvage value of the equipment may not be included to offset the bonding requirement.

Rule M-10(4)

M(6)

M-3(1)(g)

M-3(2)(d)

Premining contour maps were given. Postmining contour maps and attendant cross-sections should be given for the regrading plan. These should describe all disturbed areas.

A cross-sectional map should include both existing and proposed grades of the spent shale disposal area and waste rock embankments as well as all dams. The postmining topography for the entire Phase I operational area should be presented on a concise map that portrays nonimpoundment of drainage through appropriate regrading as discussed.

Rule M-6

It was stated that the geotechnical work thus far indicates that the pillars will be designed 50-55 foot square. In a room and pillar sequence, the size of square pillars is a function of the width of opening, rock compressive strength, in-situ vertical stress and safety factor. Some structural damage occurs to pillar walls during mining as a result of blasting, including explosive borehole pressures and vibrations. Therefore, the calculated pillar size represents dimensions for undamaged rock and design size includes an additional five-foot zone of disturbed rock on all sides. The zone of damaged rock can be minimized by controlled blasting. Has all of this been taken into consideration for determination of the pillar sizes? Will each pillar size for each panel be calculated separately? Will there be roof support?

In general, more detailed information about the mining plan is needed. The mine design was briefly mentioned, but mine construction, mining operations and mine services should be included in the mining plan.

Rule M-10(4)

The slopes of the spent shale are configured at 4:1. How will the pile be constructed? Will it be compacted? Will water bars be constructed?

Rule M-10(12)

The cover estimate provided in the application is very vague and does not list separate cover values for the different vegetative communities. The applicant should conduct on the ground baseline vegetation studies to determine the natural ground cover of any communities that will be disturbed. It is important that these figures be accurate since revegetation success standards are based on them. A vegetation type map superimposed over a facilities map would be very helpful.

What precautions will Syntana - Utah take to insure that endangered plant species, and their critical habitat, on the permit area are not disturbed? Please include any correspondence from the U. S. Fish & Wildlife Service (USFWS) on this submittal.

The applicant has indicated that test plots will be used to help determine final reclamation practices. Will test plots be set up for both spent shale and general reclaimed areas? Will any contemporaneous reclamation of the retorted shale disposal area be carried out?

Complete test plot designs including species to be planted and all other cultural variables to be employed must be submitted to the Division at least 60 days prior to implementation. A specific monitoring plan should also be included. A summary of test plot success should be submitted at least once a year, preferably with the Annual Operations and Progress Report.

Monitoring of revegetated areas during the bond release period should also be discussed. This should include monitoring methods, timing and duration of monitoring, and methods of determining whether or not the success standard has been achieved. Funds for monitoring of revegetation success should be included in surety calculations.

40-8-12

Applicant should describe how disturbance to wintering mule deer, nesting golden eagles and wintering bald eagles will be minimized.

Safety

Rule M-10(2)(b)

The applicant states that grubbed vegetation will be disposed of by use in soil stockpiles. How can it be guaranteed that slippage planes will not result decreasing the stability of topsoil stockpiles?

The applicant states that "where necessary" safety features such as fences, etc., would be provided. Please describe how this will be determined and provide a map showing the probable locations of safety features.

Describe appropriate warning signs and the locations where the signs will be posted.

Waste Rock

Rule M-3(2)(c)

M-10(4)

M-10(6)

The applicant states that "no toxic materials have been ascertained." Have analyses been conducted? If so, what types? Any data generated must be submitted to DOGM. If not, will waste rock/overburden generated in this operation be analyzed for toxicity to assure safety in surface disposal?

On page 40, the applicant indicates that "excess or unsuitable" material for reclamation would be used for fill and compacted." Where? How would unsuitability be determined? How will the applicant ensure that leachate or runoff from any "unsuitable" materials will not have an adverse effect upon the hydrologic balance or on revegetation efforts?

Have any tests been conducted on the pyritic content and susceptibility for acid development?

The applicant states on page 35 that no tests on "process materials" have been conducted. Please provide complete existing data on these materials from available information or literature.

Soil Redistribution

On page 38, the applicant states that "an 8-12 inch layer of topsoil "will be spread over the spent shale pile while on page 43, 6-10 inches is indicated. Please clarify.

1. How coarse will this material from the Superior Process be? What guarantee is there that soil will not be lost in the voids upon redistribution as it appears likely would be the case.